

WHAT IS CLAIMED IS:

1. An ink cartridge that, when used, is mounted on a recording apparatus having a pressing member and a receiving part, said ink cartridge comprising:
  - an ink container having an upper wall, a bottom wall, a first side wall intersecting the bottom wall and a second side wall intersecting the bottom wall and facing the first side wall;
  - an ink supply port disposed on the bottom wall at an offset position closer to the first side wall than to the second side wall;
  - a first projecting portion disposed on the second side wall and located closer to the bottom wall than to the upper wall, the first projecting portion having a plurality of side portions for being restricted in position when the ink cartridge is mounted on the recording apparatus;
  - a pressed portion disposed on the second side wall, the pressed portion having an upper surface for being pressed by the pressing member of the recording apparatus;
  - a retaining member engageable with the receiving part of the recording apparatus when the ink cartridge is mounted on the recording apparatus; and
  - a plurality of electrodes disposed on the first projecting portion, and electrically connected to a memory unit disposed on the ink container.
2. The ink cartridge according to claim 1, wherein the pressing member of the recording apparatus has a position restricting elastic piece formed, and the upper surface of the pressed portion includes an upper surface of the first projecting portion, and when the ink cartridge is mounted on the recording apparatus, the upper surface of the first

projecting portion is pressed toward the bottom wall by the position restricting elastic piece.

3. The ink cartridge according to claim 1, wherein the pressing member of the recording apparatus has a cartridge holding mounting lever, wherein the pressed portion includes a lever receptacle portion, and the lever receptacle portion is pressed toward the bottom wall by the mounting lever.

4. The ink cartridge according to claim 3, wherein the lever receptacle portion includes a second projecting portion disposed at a rear side of the first projecting portion in an insertion direction of the ink cartridge into the recording apparatus.

5. The ink cartridge according to any one of claims 1 to 4, further comprising a guide projecting portion extending in a loading direction of the container and which is located below the retaining member.

6. The ink cartridge according to any one of claims 1 to 4, further comprising a recessed portion formed in another wall adjacent to the wall that is formed with the first projecting portion.

7. The ink cartridge according to any one of claims 1 to 4, further comprising a valve body that is normally maintained in a closed valve state by a biasing member, and an elastic sealing member that abuts the valve body and that elastically contacts an outer circumference of an ink supply member formed in the recording apparatus, the valve body and the elastic sealing member being housed in the ink supply port.

8. The ink cartridge according to any one of claims 1 to 4, wherein the retaining member includes a lever having an engagement portion engageable with the part of the recording apparatus, and the lever has at least one projection that biases an upper portion of the lever outward as the cartridge is mounted on the recording apparatus.

9. The ink cartridge according to claim 8, wherein the at least one projection includes two side projections, said side projections being respectively provided on each side surface of the lever.

10. The ink cartridge according to any one of claims 1 to 4, wherein a width of the first projecting portion is narrower than a width of the ink container.

11. The ink cartridge according to any one of claims 1 to 4, wherein a region serving as the upper surface of the pressed portion when the cartridge is mounted on the recording apparatus includes a flat surface.

12. The ink cartridge according to any one of claims 1 to 4, wherein the electrodes are arranged in at least two rows, and the rows are perpendicular to an axis of the ink supply port.

13. The ink cartridge according to any one of claims 1 to 4, wherein the retaining member includes a lever having an engagement portion engageable with the part of the recording apparatus, and the lever comprises an elastic member that urges the ink container toward the projecting portion side.

14. The ink cartridge according to any one of claims 1 to 4, further comprising an elastic sealing member, housed in the ink supply port, that engages an ink

supply member of the recording apparatus when the ink cartridge is mounted on the recording apparatus.

15. The ink cartridge according to any one of claims 1 to 4, wherein the second side wall has at least one of a pinching recess and a protruded portion.

16. The ink cartridge according to any one of claims 1 to 4, wherein the second side wall is elongated in an insertion direction of the ink cartridge into the recording apparatus so that a length of the second side wall in the insertion direction is longer than a length of the second side wall in a direction perpendicular to the insertion direction.

17. The ink cartridge according to any one of claims 1 to 4, wherein the electrodes and the memory unit are disposed on a circuit board mounted on a surface of the first projecting portion, the surface of the first projecting portion is parallel to an insertion direction of the ink cartridge into the recording apparatus, and the electrodes are formed on an exposed surface side of the circuit board.

18. The ink cartridge according to claim 17, wherein each of the electrodes has a vertically elongated shape so that a length of each of the electrodes in a vertical direction is longer than a length of each of the electrodes in a lateral direction perpendicular to the vertical direction.

19. The ink cartridge according to any one of claims 1 to 4, wherein the electrodes and the memory unit are formed on a circuit board, and the electrodes are disposed on the circuit board at an offset position closer to the bottom wall than to the upper wall.

20. The ink cartridge according to claim 4, wherein the second projecting portion is located within a region defined by and between the outermost electrodes in a direction that is perpendicular to an insertion direction of the ink cartridge into the recording apparatus and that is parallel to the second side wall.

21. The ink cartridge according to claim 4 or 20, wherein a height of the second projecting portion from the second side wall is smaller than a height of the first projecting portion from the second side wall.

22. The ink cartridge according to claim 4 or 20, further comprising:  
an erroneous insertion preventive identification piece disposed between the first projecting portion and the second projecting portion.

23. The ink cartridge according to claim 22, wherein the erroneous insertion identification piece is constructed as a block, and the block is fixed to the ink container by a fixing member.

24. The ink cartridge according to claim 22, wherein the erroneous insertion identification piece and the first projecting portion are constructed as a unitary block, and the unitary block is fixed to the ink container by a fixing member.

25. The ink cartridge according to claim 23, further comprising: a positioning system that is disposed on a back surface of the block and the second side wall of the ink container.

26. The ink cartridge according to claim 4, wherein the upper surface of the second projecting portion at least partially extends perpendicular to a surface on which

the electrodes are formed.

27. The ink cartridge according to claim 1, further comprising at least one of a projection, a ridge and a groove formed on one of the side portions of the first projecting portion .

28. The ink cartridge according to claim 1, further comprising a first one of a projection, a ridge and a groove formed on a first said side portion and a second one of a projection, a ridge and a groove formed on a second said side portion of the first projecting portion .

29. The ink cartridge according to any one of claims 1 to 4, wherein the side portions of the first projecting portion respectively define side surfaces parallel to an insertion direction of the ink cartridge into the recording apparatus.

30. The ink cartridge according to claim 3, wherein the lever receptacle portion is integral with the first projecting portion on which the electrodes are disposed.

31. The ink cartridge according to claim 22, wherein a distal end of the identification piece is protruded outward beyond a surface on which the electrodes are formed.

32. The ink cartridge according to claim 22, wherein a plurality of the identification pieces are disposed.

33. The ink cartridge according to any one of claims 1 to 4, wherein the side portions of the first projecting portion and the upper surface of the pressed portion

have specific and predetermined positions when the cartridge is mounted on the recording apparatus.

34. The ink cartridge according to any one of claims 1 to 4, further comprising a block disposed on the second side wall, the block including:

a block body having a pair of parallel sides, a back surface intersecting the parallel sides, and a flat face intersecting the parallel sides; and

at least one projection having a tip and extending outward from the block body in the direction from the back surface toward the flat face, the tip of the projection being disposed further from the back surface than the face.

35. The ink cartridge according to claim 34, further comprising at least two said projections.

36. The ink cartridge according to claim 34, wherein the projections lie in parallel planes.

37. The ink cartridge according to claim 34, wherein the projections and the parallel sides all lie in parallel planes.

38. The ink cartridge according to claim 34, wherein the electrodes are disposed on the flat face.

39. The ink cartridge according to any one of claims 1 to 4, wherein the retaining member can be a lever.

40. The ink cartridge according to claim 1, wherein the pressed portion

can be a lever-pressed portion.

41. The ink cartridge according to claim 1, wherein the member of the recording apparatus is a position restricting elastic piece which presses the pressed portion toward the bottom wall of the ink container.

42. The ink cartridge according to claim 1, wherein the member of the recording apparatus is a cartridge holding mounting lever which presses the pressed portion toward the bottom wall of the ink container.

43. A recording apparatus, which receives an ink cartridge including: an ink supply port formed at a position, offset to one side, of a bottom wall defining in part an ink container; a projecting portion, formed on a lower portion of a first wall out of two opposing walls adjacent to the bottom wall, the projecting portion having an upper surface and side portions that have specific and predetermined positions when the cartridge is mounted on the recording apparatus, wherein the first wall is located further from the ink supply port than another wall, out of the two walls, is located; an elastically deformable lever formed on the other wall, the lever extending upwardly from the other wall to be spaced apart from the other wall, and having an engaging portion located at an intermediate position, which said engaging portion engages a corresponding part of the recording apparatus when the ink cartridge is mounted on the recording apparatus; and a plurality of electrodes formed on the projecting portion and which are electrically connected to a memory unit disposed on the ink container, the ink jet recording apparatus comprising:

a flow path forming member communicating with a recording head, and formed at a position which opposes the ink supply port of the ink cartridge which is



received by the recording apparatus,

a width direction regulating projecting portion that abuts the side portions of the projecting portion, and

a position regulating elastic piece that abuts the upper surface of the projecting portion.

44. The ink jet recording apparatus according to claim 43, wherein when the ink cartridge is mounted on the recording apparatus, the position regulating elastic piece is pressed and elastically deformed by a lower portion of the ink cartridge's projecting portion, and thereafter, when mounting of the ink cartridge is completed, the elastic piece returns to its original position and abuts the upper surface of the projecting portion.

45. The ink jet recording apparatus according to claim 43, further comprising a projecting portion formed at a position of the width direction regulating projecting portion corresponding to a rotation assisting recessed portion formed in the ink cartridge.

46. The ink jet recording apparatus according to claim 43, further comprising a plurality of contacts that are in electrical communication with respective said electrodes when said ink cartridge is mounted on said recording apparatus.

47. The ink jet recording apparatus according to claim 43, wherein the ink container further includes a container body and a lid body, the lever has one end fixed to the container body and a projection disposed on a side surface of the lever, and the apparatus further comprises a guide groove that engages the projection of the lever to

guide an upper portion of the lever outward as the ink cartridge is mounted.

48. The ink jet recording apparatus according to claim 43, wherein the recording apparatus satisfies the equation:

$$L \geq H/\tan\theta + \Delta L$$

where L is a distance from the upper surface of the projecting portion to a center of the ink supply port, wherein the upper surface of the projecting portion serves as a rotation center when the ink cartridge is removed from the recording apparatus,  $\theta$  is a rotation angle required when the ink cartridge is removed from the recording apparatus, H is an entering length of the flow path forming member and  $\Delta L$  is a positional displacement allowable range of an elastic sealing member housed in the ink supply port.

49. A recording apparatus, which receive an ink cartridge including: an ink container having a first wall surface, a second wall surface and a third wall surface, the second and third wall surfaces being adjacent to the first wall surface and opposing each other; an ink supply port disposed on the first wall surface; a retaining member disposed on the second wall surface, the retaining member having an engagement portion that elastically engages a part of a recording apparatus as the ink cartridge is mounted thereon; a lever-pressed portion disposed on the third wall surface and which is pressed by a cartridge holding mounting lever of the recording apparatus as the ink cartridge is mounted thereon; a plurality of electrodes which are disposed closer to the ink supply port than the lever-pressed portion, and which are electrically connected to a memory unit disposed on the ink container, the ink jet recording apparatus comprising:

a flow path forming member communicating with a recording head, and

formed at a position which opposes the ink supply port of the ink cartridge when the ink cartridge is mounted on the recording apparatus; and

the cartridge-holding mounting lever has a rotation fulcrum on a side of the lever-pressed portion, wherein when the engagement portion of the retaining member engages with the part of the recording apparatus, the mounting lever rotates about the rotation fulcrum, presses the lever-pressed portion to a lever-pressed portion's predetermined position and is retained in a mounting lever's predetermined position.

50. The recording apparatus according to claim 49, wherein when the ink cartridge is not mounted properly, the mounting lever is inhibited from moving to the mounting lever's predetermined position.

51. An ink cartridge that, when used, is mounted on a recording apparatus having a first receiving portion and a second receiving portion, said ink cartridge comprising:

an ink container having a first side, a second side, a top wall, a bottom wall, a front wall, and a rear wall;

an ink supply port located on the bottom wall; the ink supply port being located closer to the front wall than the rear wall;

an outwardly-extending first positioning member having a face and a top surface, the face and the top surface lying in intersecting planes, and which said first positioning member is located on the rear wall proximate to the bottom wall;

an outwardly-extending second positioning member shaped to cooperate with the first receiving portion of the recording apparatus, and which is located on the front

wall proximate to the bottom wall;

a third positioning member having an elongated member pivotally mounted on the front wall at a position between a first point where the front wall meets the top wall and a second point where the front wall meets the bottom wall; the elongated member having a projection shaped to cooperate with the second receiving portion of the recording apparatus; and

a plurality of electrodes located on the face of the first positioning member and lying in a plane parallel to the rear wall.

52. An ink cartridge according to claim 51, wherein said first positioning member has a width that is not greater than a distance between the first and the second sides of the ink container.

53. An ink cartridge according to claim 51, wherein the elongated member further comprises a guide projection, the guide projection extending outward in a generally widthwise direction, a width of the elongated member, including the guide projection, not being greater than a distance between the first and the second sides of the ink container.

54. An ink cartridge according to claim 51, wherein the ink container has an elongated and flaring notch formed at an edge where one said side meets the rear surface.

55. An ink cartridge according to claim 54, wherein the notch flares outward from the bottom surface toward the top surface.

56. An ink cartridge according to claim 51, further comprising an elastic sealing material, housed in the ink supply port, that engages a flow path forming member of the recording apparatus when the ink cartridge is mounted on the recording apparatus.

57. An ink jet recording apparatus which receives an ink cartridge having an ink container having a first side, a second side, a top wall, a bottom wall, a front wall, and a rear wall; an ink supply port located on the bottom wall; the ink supply port being located closer to the front wall than the rear wall; an outwardly-extending first positioning member having a face and a top surface, the face and the top surface lying in intersecting planes, and which said first positioning member is located on the rear wall proximate to the bottom wall; an outwardly-extending second positioning member which is located on the front wall proximate to the bottom wall; a third positioning member having an elongated member pivotally mounted on the front wall at a position between a first point where the front wall meets the top wall and a second point where the front wall meets the bottom wall; the elongated member having a projection shaped to cooperate with a corresponding second receiving portion of the recording apparatus; and a plurality of electrodes located on the face of the first positioning member and lying in a plane parallel to the rear wall, the ink-jet recording apparatus comprising:

a carriage having

an engaging portion that receives the projection of the elongated member,

a receptacle that accommodates the first positioning member, the receptacle having a downwardly projecting cantilever having a free end and dimensioned and disposed so that when the ink cartridge is mounted on the carriage the free end of the cantilever contacts the top surface of the first positioning member, and

a receiving portion dimensioned and disposed to accommodate the second positioning member; and

a plurality of contacts disposed in the receptacle, the contacts being arranged so that, when said ink cartridge is mounted in the carriage, the contacts are in electrical communication with respective said electrodes.

58. An ink jet recording apparatus according to claim 57, wherein said carriage receives a plurality of the ink cartridges.

59. An ink cartridge, comprising:

a rectangular ink reservoir having a front, a back and a bottom, the front and the back both intersecting the bottom;

an ink supply port formed in the bottom, the ink supply port having an ink supply port axis;

an identification block disposed on the back and having a pair of parallel sides, a face lying in a plane parallel to the ink supply port axis, the parallel sides being perpendicular to the face, a plurality of electrical contacts lying on the face, and at least one projection having a tip and extending outward from the identification block away from the back toward the face, the tip of the projection being disposed further from the back than the face.

60. An ink cartridge according to claim 59, having at least a first said projection and a second said projection..

61. An ink cartridge according to claim 60, wherein the first and the second projections lie in parallel planes.

62. An ink cartridge according to claim 59, wherein the first and second projections and the parallel sides all lie in parallel planes.

63. An ink cartridge according to claim 59, wherein the position of the projection corresponds to a color of an ink in the ink reservoir.

64. An identification block for mounting on an ink jet cartridge, comprising:

a block body having a pair of parallel sides, a back surface intersecting the parallel sides, and a flat face intersecting the parallel sides; and

at least one projection having a tip and extending outward from the block body in the direction from the back surface toward the flat face, the tip of the projection being disposed further from the back surface than the face.

65. An identification block according to claim 64, further comprising at least two said projections..

66. An identification block according to claim 64, wherein the projections lie in parallel planes.

67. An identification block according to claim 64, wherein the projections and the parallel sides all lie in parallel planes.

68. An ink cartridge, comprising:

an ink container having a front, a back, a top and a bottom;

an ink supply port formed in the bottom, the ink supply port having an axis;

a retaining member extending from the front toward the top, the retaining

member having a protruding engagement portion;

a projection located where a plane of the back and a plane of the bottom intersect, and extending away from the front, the projection having a surface lying in a plane that is parallel to the axis;

a memory unit disposed on the ink jet cartridge; and

a plurality of electrodes disposed on the surface and which are in electrical communication with the memory unit.

69. An ink cartridge according to claim 68, further comprising:

a flat surface lying in a plane that is parallel to the bottom,

wherein the flat surface is positioned so that when the ink jet cartridge is mounted in an ink jet printer, a structure of the ink jet printer contacts the flat surface and presses toward the bottom.

70. An ink cartridge according to claim 69, wherein the flat surface is located on the projection.

71. An ink cartridge according to claim 69, further comprising:

a protuberance extending from the back, the protuberance being located closer to the top than is the projection,

wherein the flat surface is located on the protuberance.

72. An ink cartridge, comprising:

an ink container having a front, a back, a top and a bottom;

an ink supply port formed in the bottom, the ink supply port having an axis;

a retaining member extending from the front toward the top, the retaining



member having a protruding engagement portion;

a projection located where a plane of the back and a plane of the bottom intersect, and extending away from the front, the projection having a surface lying in a plane that is parallel to the axis;

a memory unit disposed on the ink jet cartridge;

a plurality of electrodes disposed on the surface and which are in electrical communication with the memory unit; and

an identification protrusion extending outward from the back at a position located between the top and the projection.

73. An ink cartridge according to claim 72, further comprising:

a flat surface lying in a plane that is parallel to the bottom,

wherein the flat surface is positioned so that when the ink jet cartridge is mounted in an ink jet printer, a structure of the ink jet printer contacts the flat surface and presses the flat surface toward the bottom.

74. An ink cartridge according to claim 73, wherein the flat surface is

located on the projection.

75. An ink cartridge according to claim 73, further comprising:

a protuberance extending from the back, the protuberance being located closer to the top than is the projection,

wherein the flat surface is located on the protuberance.

76. An ink cartridge according to any one of claims 72 to 75, wherein

the protrusion extends outward past the plane in which the surface lies.

77. An ink cartridge according to any one of claims 72 to 75, wherein at least one of a shape, a width and a length of the protrusion corresponds to a property of an ink carried in the ink container.

78. An ink cartridge that, when used, is mounted on a recording apparatus having a contact structure, said ink cartridge comprising:

- an ink container having a front, a back, a top and a bottom, the front intersecting the bottom at a first edge, the back intersecting the bottom at a second edge, the top intersecting the front at a third edge, and the top intersecting the back at a fourth edge;

- an ink supply port formed in the bottom, the ink supply port having an axis;

- a retaining member extending from the front at a position between the first edge and the third edge toward the top, the retaining member having a protruding engagement portion;

- a raised rib disposed on the front, the rib extending in a direction parallel to the axis from the first edge toward the top;

- a projection located at the second edge and extending away from the front, the projection having a surface lying in a plane that is parallel to the axis;

- a memory unit disposed on the ink jet cartridge;

- a plurality of electrodes disposed on the surface and which are in electrical communication with the memory unit;

- a protuberance extending from the back, the protuberance being located between the fourth edge and the projection, the protuberance having a flat surface positioned so that when the ink jet cartridge is mounted in the ink jet printer, the contact structure of the ink jet printer contacts the flat surface and presses the flat surface toward

the bottom; and

an identification protrusion extending outward from the back at a position located between the second edge and the fourth edge.

79. An ink cartridge according to claim 78, wherein the protrusion extends outward past the plane in which the surface lies.

80. An ink cartridge according to claim 78 or 79, wherein at least one of a shape, a width and a length of the protrusion corresponds to a property of an ink carried in the ink container.